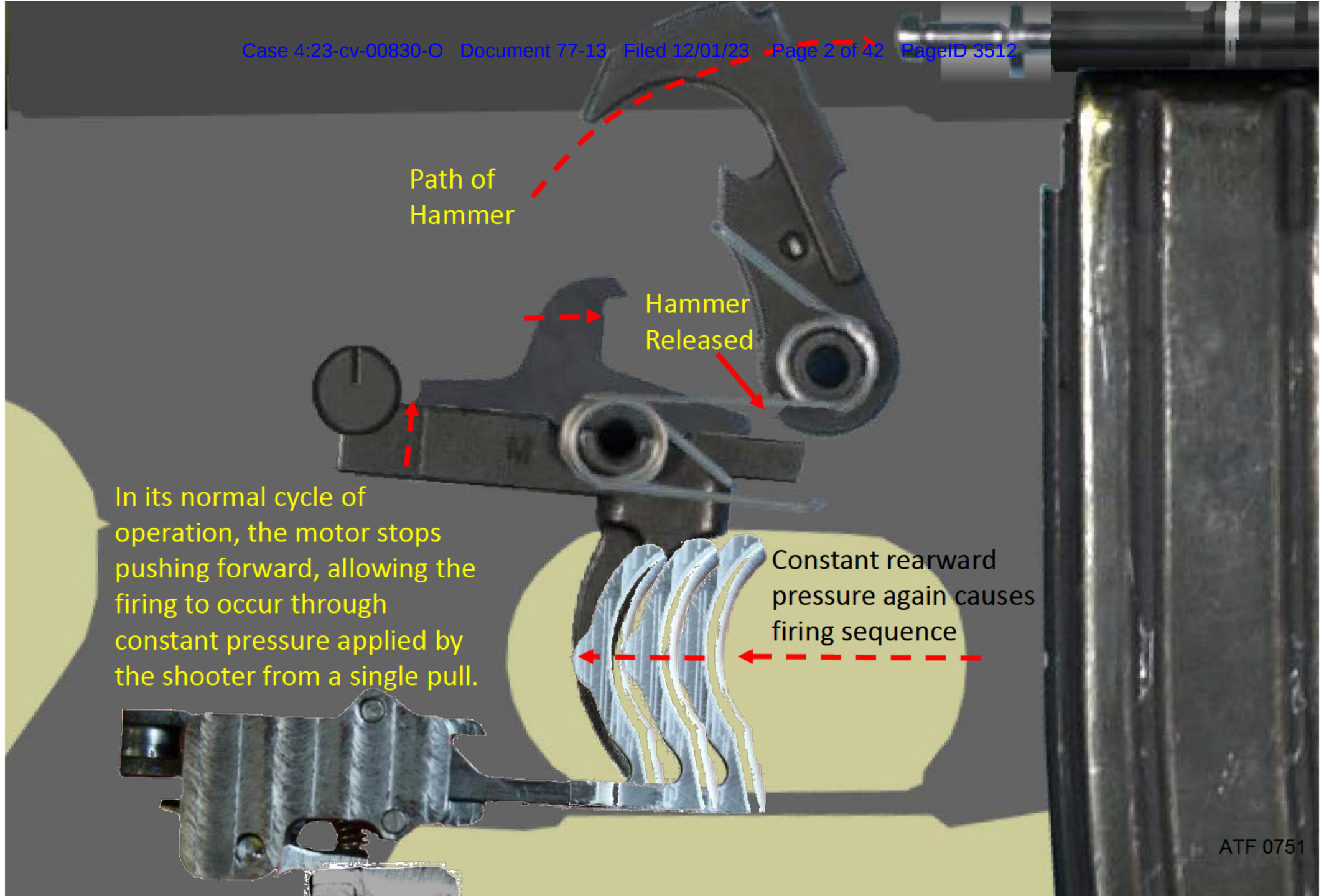
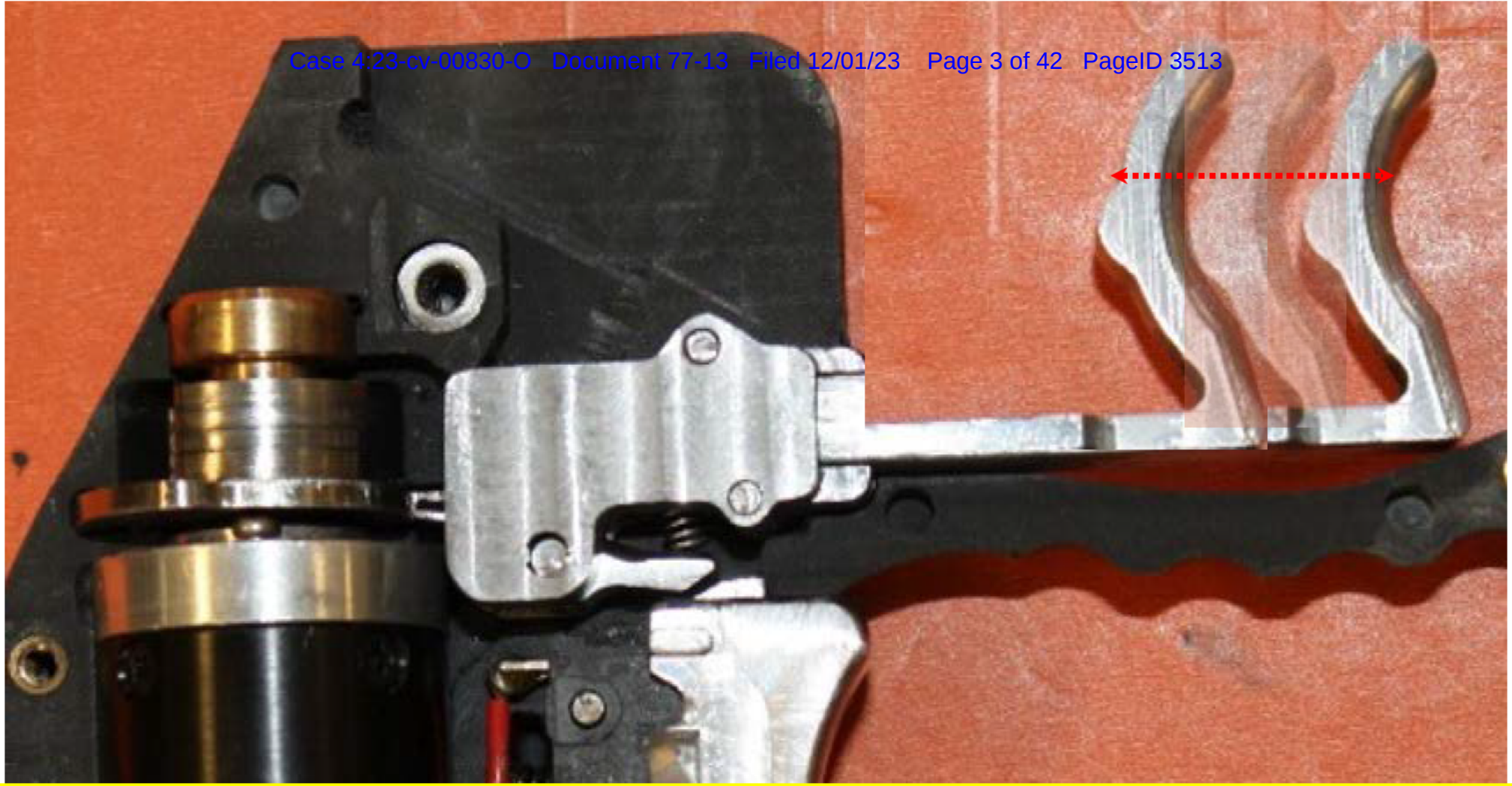
VOLUME 13


Path of Hammer
Hammer Released
In its normal cycle of operation, the motor stops pushing forward, allowing the firing to occur through constant pressure applied by the shooter from a single pull.
Constant rearward pressure again causes firing sequence



A single pull of the trigger by the shooter starts a firing sequence in which an otherwise semiautomatic operation is overcome by the motor. After the shooter pulls the trigger, the motor causes the shooter's finger to be pushed forward, *but not release the trigger*. Once the firearm automatically resets, the motor stops pushing the finger forward, and the single, constant pull of the shooter's trigger results in the firing of a second projectile. This firing sequence continues until the shooter releases the trigger or the firearm exhausts the ammunition supply.

In this way, a firearm with the attached device shoots automatically, more than one shot, with without manual reloading by a single function of the trigger. The device is therefore a combination of parts, designed and intended, for use in coverting a weapon in to a machinegun.

ATF 0752

SEE ALSO 304847

EVR 305—303

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September 7, 2016

VIA FEDERAL EXPRESS NEXT DAY
Michael R. Curtis
Chief, FTISB
United Stated Department of Justice
Bureau of Alcohol Tobacco Firearms and Explosives
244 Needy Road
Martinsburg, WV 25401

RECEIVED
SEP 0 8 2016
BY. FATD

Re: Supplemental [redacted] Submission

TWO THUMB DRIVES

Dear Mr. Curtis:

As you know, our firm represents [redacted] and we, along with our technical advisor, have been working with [redacted] to compile certain supplemental information relating to ATF's evaluation of Freedom's Electronic Reset Assist Device (ERAD) AR trigger system. This additional information supports a classification of the ERAD as a non-firearm, and it includes high speed video of both the ERAD and other similar products in operation in the video (in multiple formats) on the enclosed flash drives. Also enclosed are certain written materials regarding the ERAD patent filing.

To begin, we do not believe there is any material disagreement among ATF, us, [redacted], and our technical advisor regarding how ATF clarifies the definition of a machinegun and how ATF classifies devices/firearms as machineguns. Specifically:

I. Clarification of Machinegun Definition.

As defined in 26 United States Code, Chapter 53, section 5845(b), the term "machinegun" means any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

In order to more fully analyze this statute, we find it helpful to break it out into its constituent parts.

A. The term "machinegun" means any weapon which shoots....

As a result, if you have a weapon that when loaded and you pull the trigger it shoots continuously with one conscious pull of the trigger, it is a machinegun capable of automatic fire. This portion is designed to classify any weapon that shoots automatically for whatever reason. If the weapon was originally designed as a semiautomatic weapon and was converted to shoot automatically by some means such as a conversion device, or modifications to the parts of the firearm, then it would fit this portion of the definition.

B. The term "machinegun" means any weapon which is designed to shoot....

Accordingly, if a firearm is made as a machinegun from the factory or modified into a machinegun configuration with design features that allow it to shoot automatically, it is a machinegun. For instance, an M240 or M249 was designed by the manufacturer to have the capability of shooting automatically, and these types of weapons have design features different from semiautomatic variants. These receivers of machineguns will generally accept different parts from a semiautomatic version as in a machinegun sear, or they are straight blowback devices that once you pull the trigger and a cartridge fires, through the inertia of a bolt the firearm cycles and fires again.

C. The term "machinegun" means any weapon which can be readily restored to shoot....

This provision applies to weapons that previously shot automatically because of design features that allowed the weapon to shoot automatically, but in their current condition, do no shoot automatically. However, with minor work they can be put back into the condition in which they can shoot automatically.

D. The term "machinegun" shall also include the frame/receiver of any such weapon.

A firearm receiver with the design features of a machinegun is a machinegun all by itself, even without all of the other parts necessary to actually make the gun fire. Those features are the mechanical design that is imparted into the receiver that allows the firearm to shoot automatically. For example, if an AK47 is stripped and all of the parts are thrown away, the receiver still has the design features to accept an automatic sear, which is the key component to allow automatic fire. As a result, the receiver itself is classified as a machinegun. Similarly, taking a semiautomatic variant receiver without these design features and modifying it into the same configuration as an AK47 would change the classification of the semiautomatic receiver to a machinegun receiver.

E. The term "machinegun" includes any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun.

This provision refers to items commonly called conversion devices. These are generally a modified part of a semiautomatic weapon or a fabricated part that causes the weapon to function as a machinegun. Since the only purpose of these parts is to make a semiautomatic weapon shoot automatically they are classified as machineguns.

F. The term "machinegun" includes any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

There are circumstances in which an individual is in possession of everything it takes to fabricate a machinegun but might not actually have put the parts together yet. While parts or plans for a machinegun are not themselves prohibited, a combination of parts, components, plans, and tools from which a machinegun could be assembled can also be considered a machinegun

Again, we do not believe that there is any disagreement as to any of the above, and all of the above concepts were specifically taken into account by [redacted] as it developed the ERAD. Moreover, the development of the ERAD has also taken many other items, issues, and guidance into account, including the Fifth Circuit court opinion regarding the attachment of an electric fishing reel to a weapon (which when activated with a switch fired the weapon and was deemed to be a machinegun), the published 2006-2 ruling relating to the Akins accelerator, and the opinions relating to the [redacted] and other devices that enhance, but do not change the character of, semiautomatic fire. In short, Freedom has diligently researched and understood the applicable principles, as well as specifically designed a device to be in accordance with them.

II. Operating Principle.

The ERAD is composed of a transfer bar that floats inside the raceway of the trigger housing and which rides on a cam that is attached to the electric motor in the grip housing. As the motor turns, the cam lobe pushes the trigger reset bar forward. The ERAD does not continually engage the trigger during its operation. Instead, it engages the trigger finger, which when consciously and deliberately pulled, engages the trigger. In fact, the exact function of the ERAD is to push the trigger finger forward, when the firing sequence is initiated, rather than pull the trigger rearward. Since it is a completely self-contained system that does not engage the hammer or disconnector, The ERAD will only engage the trigger when it is consciously and deliberately pulled rearward to activate the firing sequence.

Once the user consciously and deliberately pulls the trigger and simultaneously engages the electric switch, the ERAD activates the trigger finger reset mechanism, and the reset bar applies only forward tension to the trigger finger. The ERAD cannot under any circumstances apply rearward tension to the trigger finger, the trigger itself, and/or any other part of the operating mechanism. Thus, the shooter pulls the trigger sufficiently to activate the firing sequence, and the trigger finger reset bar then propels the trigger finger forward away from the firearm trigger, actually clearing the trigger such that the trigger moves fully forward and there is a gap between the reset bar and the trigger itself. Accordingly, the trigger, hammer, and disconnector continue to function exactly as originally designed.

Because the shooter is consciously and deliberately applying rearward pressure to fire the firearm, the shooter must similarly overcome the forward pressure of the trigger finger reset bar to fire the weapon. As long as the shooter continues to apply conscious and deliberate rearward pressure to the reset bar, it will continue to fire one shot per pull of the trigger. The trigger finger reset bar is not the trigger, nor can it activate the firing sequence. Rather, it is the shooter's conscious and deliberate pull of the reset bar that subsequently engages the trigger that causes the weapon to fire. The enclosed high speed video clearly confirms that the ERAD is not a machinegun under any definition set forth above, and it also demonstrates that the trigger reset bar and the shooters trigger finger are both the gun's trigger each time the weapon is fired. In fact, the device cannot be made to function any other way.

That the ERAD is not a machinegun is also demonstrated by a simple and obvious test regarding the device's achievable rate of fire. Because the finger reset device causes the trigger finger to completely disengage from the trigger (with the resulting gap between the trigger face and the reset bar that is seen on the video), the unavoidable portions of a second that are lost when the trigger is completely disengaged, allows an AR with the ERAD installed to achieve only between a 400 to 450 rounds per minute rate of fire. In comparison, both the TacCon trigger and the [redacted] advertise a 600+ rounds per minute rate of fire, which these devices are able to achieve because the trigger finger is never disengaged from the trigger and once the trigger is allowed to reset on the hammer, the firing sequence continues without the interruptions inherent in the design and operation of the ERAD.

III. Classifications

Many decisions classifying trigger actuating devices are based on the 2006-2 Akins Accelerator ruling and the Fifth Circuit court opinion on the electrically-powered fishing reel attached to a firearm. The following is an excerpt on how the Akins Accelerator operates, and it is taken directly from ATF Ruling 2006-2:

> ATF has examined several firearms accessory devices that are designed and intended to accelerate the rate of fire for semiautomatic firearms. One such device consists of the following components: two metal blocks; the first block replaces the original manufacturer's V-Block of a Ruger 10/22 rifle and has attached two rods approximately ¼ inch in diameter and approximately 6 inches in length; the second block, approximately 3 inches long, 1 ⅜ inches wide, and ¾ inch high, has been machined to allow the two guide rods of the first block to pass through. The second block supports the guide rods and attaches to the stock. Using ¼ inch rods, metal washers, rubber and metal bushings, two collars with set screws, one coiled spring, C-clamps, and a split ring, the two blocks are assembled together with the composite stock. As attached to the firearm, the device permits the entire firearm (receiver and all its firing components) to recoil a short distance within the stock when fired. A shooter pulls the trigger which causes the firearm to discharge. As the firearm moves rearward in the composite stock, the shooter's trigger finger contacts the stock. The trigger mechanically resets, and the device, which has a coiled spring located forward of the firearm receiver, is compressed. Energy from this spring subsequently drives the firearm forward into its normal firing position and, in turn, causes the trigger to contact the shooter's trigger finger. Provided the shooter maintains finger pressure against the stock, the weapon will fire repeatedly until the ammunition is exhausted or the finger is removed. The assembled device is advertised to fire approximately 650 rounds per minute. Live-fire testing of this device demonstrated that a single pull of the trigger initiates an automatic firing cycle which continues until the finger is released or the ammunition supply is exhausted.

(emphasis added). All of these previously evaluated devices, however, have one thing in common; that is, they operate the trigger of the firearm. The ERAD, however, is merely a trigger finger reset device that is neither affixed to the trigger nor can function on the trigger. It simply pushes the shooter's trigger finger off of the trigger allowing the natural reflex of pulling the trigger to happen in a rapid movement.

IV. Conclusion.

[redacted] is respectfully asking for a secondary review of the ERAD trigger finger reset device based on the high speed video being providing and on this clarification of how the device can and does operate. Specifically, the ERAD:

- Is not a trigger firing system that is operated by electricity.
- Is not a trigger reset device such as the TacCon trigger.
- Is not a bump fire device as the [redacted].
- Is not a hydraulic or spring actuated trigger that allows the weapon to fire with one pull of the trigger.

On the other hand, the ERAD:

- Is a trigger finger reset device that uses battery power to force the reset device, along with the trigger finger, forward "completely" off of the trigger in a rapid manner.
- Removes the rearward pressure created by the pull of the trigger to rapidly come away from the trigger.
- With no opposing force on the trigger allows the trigger to reset to the firing position rapidly and under normal spring tension.
- The natural, conscious, and deliberate force of the shooter being applied to the trigger reset device is continued rearward pulling the trigger again.
- This sequence is repeated allowing the shooter to pull the trigger approximately 400 times per minute.

Accordingly, the ERAD is not a machinegun because it is not designed as a machinegun, nor is it a part designed and intended to convert a semiautomatic firearm into a machinegun, nor does it meet any other portion of the statutory definition of machinegun.

If you have any questions and/or require any further information, please do not hesitate to contact me [redacted]) or Richard Vasquez [redacted] would also welcome the opportunity to meet with you in person in order to provide whatever other details you may require.

Otherwise, we thank you for accepting this additional information, and we look forward to hearing from you in the near future.[1]

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1 I know there were some issues with the video that was previously submitted by [redacted]. However, I personally viewed the files on the enclosed flash drives and they worked without incident, so if you have any problems with viewing them, please just let me know so that we can correct them immediately.

Very truly yours,

Scott L. Braum

Enclosures: Two flash drives
Patent documents

cc: [redacted]
Rick Vasquez

SLB:slh

FIREARM TRIGGER FINGER RESET

CROSS REFERENCES TO RELATED APPLICATIONS: U.S. Provisional Application for Patent No. 62/255,723, filed 11/16/2015, with title "Firearm Trigger Reset" which is hereby incorporated by reference. Applicant claims priority pursuant to 35 U.S.C. Par. 119(e)(i).

Statement as to rights to inventions made under federally sponsored research and development: Not Applicable.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a trigger mechanism of a firearm, and more specifically, to an external power source for a user's trigger finger reset upon discharge of a firearm.

2. Brief Description of Prior Art

Semi-automatic firearms are well known in the art. Common to this type of firearms is its dependency on a user's ability to continually pull the trigger in a rapid manner when a high rate of fire is desired. Because human fatigue reduces an amount of time that a high rate of fire can be sustained, or physiological impairments may interfere with a user's ability to operate the trigger effectively, there are ongoing efforts to improve firearm design.

As stated, one of the limiting factors of semi-automatic firearms is the user's ability to continually pull the trigger in a rapid manner when higher rates of fire are desired. Human finger speed can be quick for only a short period of time and would not be

continually uniform. The use of a fully automatic gun is often cost prohibitive. Fully automatic guns also have complicated internal mechanisms which make them more prone to jamming and breaking and makes them harder to fix. The prior art has not adequately addressed these issues. Therefore, it can be appreciated that there is room in the art for significant improvement on the prior art with regard to the trigger action. The present invention addresses these needs.

The preferred embodiments of the present invention overcome disadvantages of the prior art. In this regard, the present invention discloses a trigger reset that utilizes an external power source for resetting the user's trigger finger after fire. Still other objects will become apparent from the more detailed description which follows.

SUMMARY OF THE INVENTION

A trigger finger reset that is disposed in a firearm handle or grip including an electric motor used with the disclosed trigger reset system. The trigger reset further includes a battery, a gear box and cam lobe mounted on a shaft of the motor. A reset bar assembly is secured to cam lobe. As shaft turns, cam lobe moves to provide a reciprocating motion to reset bar assembly. Rearward movement of the firearm trigger causes movement of the reset bar assembly in a rearward longitudinal direction. When the trigger reset is actuated, the motor rotates the cam lobe moving the reset bar assembly in a forward position thereby urging the user's trigger finger to a reset position prior to actuating the next firing sequence.

The reset trigger finger device further includes a switch that is electrically connected to the motor and battery, and is disposed in the grip of the firearm. A face portion of the switch is positioned on the exterior surface of the grip and immediately below the trigger for easy accessibility when holding or firing the firearm. Continually pressing the switch while holding and/or firing the firearm will maintain actuation of the trigger finger reset.

And, releasing the electric switch will deactivate the reset. Thus, while the reset is actuated, the trigger can be depressed and the activated trigger reset will immediately reset the user's trigger finger as described with less effort by the user.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a prior art firearm that includes a preferred embodiment of the present invention, a firearm trigger reset.

Fig. 2 is a perspective view of the present invention illustrating the positioning of the present invention with respect to a prior art firearm's trigger mechanism.

Fig. 3 is a sectional view of a prior art firearm's grip with the present invention disposed therein.

Fig. 4 is a side view of the present invention shown in Fig. 3.

Fig. 5 illustrates the firearm and present invention of Fig. 1 in application.

Fig. 6 is a bottom perspective view of the firearm and present invention of Fig. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The mechanism of the present invention is directed to a firearm trigger finger reset that is used with semi-automatic firearms. Unlike the prior art, the firearm trigger finger reset of the present invention defines a trigger reset that utilizes an external power source for resetting the user's trigger finger after fire. As will be described, the firearm trigger finger reset as disclosed further consists of components configured and correlated with respect to each other so as to attain the desired objective.

From the outset, it should be understood that the present invention relates to a trigger finger reset for quickly and continuously resetting the user's trigger finger upon discharge. The present invention does not alter the cycle of operation of firing the semi-automatic firearm which is widely known and again, not altered by the present invention.

A trigger finger reset designated as numeral 10 of the present invention generally includes a reset bar assembly 20 in communication with a reset mechanism 29 that generally includes a cam lobe 25, a gear box 30, a clutch member 45, and a power source 40. The trigger reset 10 also preferably includes an electric motor 35 in electrical connection 36 with power source 40.

In the embodiment illustrated, the reset mechanism 29 is disposed in the firearm's 99 handle or grip 110. In this regard, the firearm's handle 110 includes a molded front and rear casing 110a, 110b, which can serve as a housing for the trigger reset mechanism 29 and the bar assembly 20. However, it should be understood that the reset mechanism 29 or components of the reset mechanism 29 may be disposed for example in the shoulder stock (not designated) of the firearm 99, or external of the firearm 99.

The electric motor 35 and gear box 30 are standard commercial components. Electric motor 35, for example, is preferably a low voltage DC motor. Power to motor 35 is preferably a battery 40 mounted in a battery mount. Switch 50 is electrically connected 50a to motor 35 and battery 40.

The bar assembly 20 is comprised of an arm 21 that defines an extension 23. The opposite end 20a of bar assembly 20 terminates adjacent cam lobe 25. During operation, the bar assembly 20 is translated by rotation of the cam lobe 25 and communication between cam lobe 25 and opposite end 20a. Rotation of cam lobe 25 is via the electric motor 35. Opposite end 20a is preferably a roller assembly that includes a roller axle (not shown) and roller 20b configured to engage the cam lobe 25. In particular, the purpose of the roller assembly 20a is to roll around the perimeter 25a of

the cam 25 moving from a high position and to a low position (as will be further discussed), and vice versa. The roller 20b reduces friction between the assembly 20a and perimeter 25a, compared to a non-roller piece.

The gear box 30 is in communication with the motor 35 and cam lobe 25 is mounted on shaft 37 of motor 35 to drive the cam lobe 25. Gear box 30 configured to rotatably position the cam lobe 25 when motor 35 is actuated. Motor 35 and gear box 30 are connected 31 using standard couplings.

Switch 50 is electrically connected 50a to the motor 35 and battery 40, and is preferably disposed in the grip 110 of the firearm. As illustrated, a face portion 51 of the switch 50 is positioned on the exterior surface of the grip and immediately below the trigger 100. Preferably, the switch 50 is a pressure sensor.

As is known, when a user fires the firearm, the user generally wraps its hand 120 around the grip 110 of the firearm 99 with the index (trigger) finger 121 positioned against the trigger 100. In this position, and in the preferred embodiment (see fig. 5), the third 122 or fourth 123 finger then is naturally positioned over the switch 50. Continually pressing the switch 50 while holding and/or firing the firearm will maintain actuation of the trigger reset 10. And, releasing the switch 30 will deactivate the reset 10.

Thus, while the reset 10 is actuated, the trigger 100 can be depressed by the user manually urging the extension 23 in the rearward direction with his/her trigger finger and the activated trigger reset 10 will immediately reset the extension 23 causing the user's trigger finger to be pushed off the extension 23 with little effort by the user. As should be understood, when the trigger 100 is actuated as described, the firearm's own firing mechanism will reset the trigger 100 for firing.

Clutch member 45 is in mechanical communication with the switch 50. A tip 46 of clutch member 45 is in releasable communication with at least one notch 26a of the cam lobe

25. In particular, when switch 50 is activated, the clutch member 45 first disengages its hold on cam 25 by releasing tip 46 from notch 26a. Such releasing action is accomplished by the face portion 51 of the switch 50 being pulled in a rearward direction by the user's middle finger 122 which causes the camming geometry 125 on top of the face portion 51 of the switch 50 to rotate clutch member 45 and specifically rotating or releasing tip 46 from notch 26a of the cam 25.

Once released, the motor 35 is able to turn the cam 25. As cam 25 turns, the cam 25 pushes reset bar 20 in a forward motion (see Arrow "F" in Fig. 4 and Fig. 5), pushing the user's trigger finger forward with the extension 23 and off the trigger 100 allowing it to quickly reset and the cycle continues in fractions of a second until the user releases the switch 50.

Cam lobe 25 may be located on and fixed for rotation with shaft 37. As shaft 37 turns, cam lobe 25 moves to provide a reciprocating motion to reset bar assembly 20. More particularly, the gear box 30 and cam lobe 25 generally define a first position and a second position. In the first position, cam lobe 25 is at a first or rest position, and in the second position and upon actuation of the trigger reset 10, the motor rotates cam lobe from the second position to the rest position.

When the cam lobe 25 is in the defined rest position, the extension 23 has been reset as a result of cam 25 making at least a 180 degree rotation, meaning, the roller assembly 20a has gone from a low point to a high point back to a low point which occurs every 180 degrees of rotation. The trigger 100 is once again ready to fire, and reset bar 20 is therefore tangent to the firearm trigger 100 as a result of contact point 22 disposed on the extension 23. At this point, roller assembly 20a is not in contact with cam 25, there is now a gap (not shown) between cam 25 and roller assembly 20a which is caused by the user releasing pressure from his trigger finger 121 and releasing pressure off switch 50 with his middle finger 122.

As described, when activated, and when the cam lobe is in the second position, the motor turns cam lobe to the rest position, which moves the reset bar 20 forward and returns the extension 23 to a reset, ready to fire position.

As illustrated, cam lobe 25 includes a bottom plate portion 26 that includes the at least (1) notch 26a. In application, the cam lobe 25 defines a high position HP and a low position LP (see Fig. 2). When the reset bar 20 is in the full low position LP (as shown in the drawings) of the cam 25 the device 10 is ready for the user to fire the weapon, and when the roller 20b is on the high position of the cam 25, the user is not able to fire the firearm because the reset bar 20 is pushing the user's finger in the forward direction F away from the firearm trigger 100.

When the switch 50 is disengaged, the clutch member 45 is configured to rotate such that the clutch tip 46 is received in notch 26a to stop the motor 35 from rotating the cam 25. More particularly, clutch member 45 is configured to allow motor 35 to rotate approximately half a revolution until the reset bar 20 and particularly the roller assembly 20a and the cam 25 are returned to the same position (low spot) before the switch 50 was engaged.

Again it should be understood that when the switch 50 is not engaged, the reset bar 20 is in the low position LP and the user is able to take single shots with the firearm without application or engagement of the clutch, motor and cam as described.

In the present non-limiting example, the reset bar assembly 20 is generally perpendicular to the length of the firearm's trigger 100 and defines an extension 23 that is operably engageable with the trigger 100. As illustrated, the extension 23 preferably has a very similar shape and form as the trigger 100 and is aligned in front of and parallel with the trigger 100.

As described, upon operation of the trigger reset 10 via rearward movement of the extension 23, a contact point 22 of the extension 23 engages the firearm's trigger 100.

The reset mechanism 29 is preferably a self-supporting assembly within the housing 110. As illustrated, the housing 110 includes appropriate couplings for securing the mechanism 29 within the housing. The battery 40 is preferably positioned in a base portion 111 of the grip 110. The motor 35 is positioned adjacent the power source 40 with the gear box 30 coupled to the motor 35. The cam lobe 25 coupled with the gear box 30 as described.

The reset bar assembly 20 may be biased in lateral directions via a spring (not shown) or the like. As described, rearward movement of the reset bar's extension 23 causes a reciprocal movement by the trigger 100 in a rearward longitudinal direction. After firing, the trigger reset 10 is actuated such that the motor 35 rotates the cam lobe 25 moving the reset bar assembly 20 in a forward, or the rest position thereby urging the extension 23 to a reset position prior to actuating the next firing sequence.

As illustrated, the trigger reset 10 further includes a printed circuit board assembly 60 that is in electrical communication with the reset mechanism 29. In particular, the assembly 60 is configured to (1) act as a reverse current protection should various acts of user error for example, cause the motor 35 to run in reverse. As may be understood, if the reset device were to mistakenly run in reverse it would likely cause damage to the device including damage to the electric motor 35. The board assembly 60 provides a protection from such damage occurring. (2) The board assembly 60 further serves as a voltage amplifier by taking input voltage from the power source 40 and approximately doubling it after passing through the board assembly 60 giving an approximate 40%-50% input voltage increase to the motor. The inventor has found this voltage amplifier feature critical to the present invention since it is important to achieve the proper revolutions per minute (rpm) for the device to function as desired. (3) The board assembly 60 further serves as a low voltage shut off. Once the power source (battery) 40 can no longer maintain enough voltage input for the board 60 to amplify and run the

motor 35 at the desired rpm, the board assembly 60 will automatically stop or shut off power to the device. The inventor has found that the board assembly 60 and electronics described in the reset mechanism 29 can be damaged by low input voltage and the rpm can slow down and not operate the device as intended.

During operation of the firearm, the user can depress the extension 23 urging the trigger in the rearward direction to fire. Depressing switch 50 as described generally results in activation of the device 10, movement of the clutch member 45 and rotation of the cam lobe 25 as described that moves the reset bar in the forward F position. Forcing the reset bar 20 forward as described likewise urges the user's trigger finger forward to a reset position. As such, the reset bar assembly 20 is configured to continuously and forcibly return the extension 23 (and the user's trigger finger) to the trigger's reset after firing.

Although the above description above contains many specificities, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. As such, it is to be understood that the present invention is not limited to the embodiments described above, but encompasses any and all embodiments within the scope of the claims.

It would be obvious to those skilled in the art that modifications may be made to the embodiments described above without departing from the scope of the present invention. For example, although not shown, rather than using a battery for power as illustrated and described, the power source may be some other known power means such as a supply of regulated air pressure from an external source. Thus the scope of the invention should be determined by the appended claims in the formal application and their legal equivalents, rather than by the examples given.

Claims

I claim:

1. A trigger finger reset comprising:
a reset bar assembly in communication with a reset mechanism comprising a gear box, a clutch member, a power source, and an electric motor having a shaft, and a cam lobe fixed for rotation with said shaft, said motor in electrical connection with said power source, said reset mechanism disposed in a firearm's grip,
a switch in electrical communication with said motor, said switch including a face portion positioned on an exterior surface of the firearm's grip immediately below the firearm's trigger,
said reset bar assembly having a first end that defines an extension, and an opposite end that defines a roller assembly that terminates adjacent a perimeter of said cam lobe such that rotating said cam lobe provides a reciprocating motion to said reset bar assembly, wherein said extension is aligned in front of and parallel with the firearm's trigger and is operably engageable with the trigger,
said clutch member in mechanical communication with said switch, and wherein a tip of said clutch member is releasably received within an at least one notch disposed on a lower plate of said cam lobe such that when said switch is activated said clutch member disengages its hold on said cam lobe releasing said tip from said notch allowing said motor to turn said cam lobe and push said reset bar in a forward motion thereby pushing a user's trigger finger off the extension,
wherein said cam lobe defines a high position and a low position and when said reset bar assembly is in the full low position of said cam lobe said trigger finger reset is positioned for the user to fire the firearm, and when said reset bar assembly is on the high position of said cam lobe the user is not able to fire the firearm since the reset bar is pushing the

extension in the forward direction away from the firearm trigger, and when said switch is disengaged said clutch member is configured to rotate such that said clutch tip is received in said notch to stop said cam lobe from rotating,

a printed circuit board assembly in electrical communication with said reset mechanism, said printed circuit board assembly including a reverse current protection, a voltage amplifier, and a low voltage shut off.

2. The trigger finger reset of claim 1, wherein said roller assembly includes a roller axle and a roller configured to engage said perimeter of said cam lobe.
3. The trigger finger reset of claim 2, wherein when said switch is disengaged said clutch member is configured to allow said motor to rotate approximately half a revolution until said reset bar and said cam lobe are returned to the low position before the switch was engaged.
4. A trigger finger reset comprising:

a reset bar assembly in communication with a reset mechanism that includes a cam lobe, a gear box, a clutch member, a power source, and an electric motor in electrical connection with said power source,

a switch electrically connected to said motor and said power source,

said reset bar assembly includes an arm that defines an extension, and an opposite end of said reset bar assembly is adjacent said cam lobe, and wherein said gear box is configured to rotatably position said cam lobe relative to said opposite end, wherein said extension is aligned in front of and parallel with a firearm's trigger and is operably engageable with the trigger,

said clutch member in mechanical communication with said switch, and wherein a tip of said clutch member is in releasable communication with at least one notch disposed in said cam lobe such that when said switch is activated said clutch member disengages its hold on said cam lobe releasing said tip from said notch allowing said motor to turn said cam

lobe and push said reset bar in a forward motion thereby pushing a user's trigger finger forward with the extension,

wherein said cam lobe defines a high position and a low position and when said reset bar assembly is in the full low position of said cam lobe said trigger finger reset is positioned for the user to fire the firearm, and when said reset bar assembly is on the high position of said cam lobe the user is not able to fire the firearm since the reset bar is pushing the extension in the forward direction away from the firearm trigger, and when said switch is disengaged said clutch member is configured to rotate such that said clutch tip is received in said notch to stop said cam lobe from rotating,

a circuit board assembly in electrical communication with said reset mechanism, said circuit board assembly configured to provide reverse current protection.

5. The trigger finger reset of claim 4, wherein said reset mechanism is disposed in the firearm's grip.
6. The trigger finger reset of claim 4, wherein said opposite end is a roller assembly that includes a roller axle and a roller configured to engage a perimeter of said cam lobe.
7. The trigger finger reset of claim 2, wherein said switch is disposed in the grip.
8. The trigger finger reset of claim 7, wherein a face portion of said switch is positioned on an exterior surface of the grip immediately below the firearm's trigger.
9. The trigger finger reset of claim 8, further including a camming member in communication with said switch, said camming member configured to rotate said tip off said at least one notch.
10. The trigger finger reset of claim 4, wherein said cam lobe includes a bottom plate portion that includes said at least (1) notch.
11. The trigger finger reset of claim 4, wherein when said switch is disengaged said clutch member is configured to rotate said shaft

approximately half a revolution until said reset bar and said cam lobe are returned to the same position before the switch was engaged.

12. The trigger finger reset of claim 4, wherein said circuit board assembly is a voltage amplifier configured for taking input voltage from said power source and increasing voltage to said motor.

13. The trigger finger reset of claim 12, wherein said circuit board assembly further configured to shut off said trigger finger reset when said input voltage is insufficient to run said motor.

14. A trigger finger reset comprising:

a reset bar assembly, a reset mechanism that includes a cam lobe, a gear box, a clutch member, a power source, and an electric motor in electrical connection with said power source,

a switch in electrical communication with said motor,

said reset bar assembly includes an arm that defines an extension, and an opposite end that defines a roller assembly, wherein said extension is aligned in front of and parallel with a firearm's trigger and is operably engageable with the trigger,

said clutch member in mechanical communication with said switch, and wherein a tip of said clutch member is releasably received within an at least one notch disposed on said cam lobe such that when said switch is activated a camming member is configured to disengage said tip from said notch allowing said motor to turn said cam lobe and push said reset bar in a forward motion thereby pushing a user's trigger finger off the extension, wherein said cam lobe defines a high position and a low position and when said reset bar assembly is in the full low position of said cam lobe said trigger finger reset is positioned for the user to fire the firearm, and when said reset bar assembly is on the high position of said cam lobe the user is not able to fire the firearm since the reset bar is pushing the extension in the forward direction away from the firearm trigger, and when said switch is disengaged said clutch member is configured to rotate such

that said clutch tip is received in said notch to stop said cam lobe from rotating,

a printed circuit board assembly in electrical communication with said reset mechanism.

15. The trigger finger reset of claim 14, wherein said roller assembly includes a roller axle and a roller configured to engage a perimeter of said cam lobe.
16. The trigger finger reset of claim 14, wherein a face portion of said switch is positioned on an exterior surface of the grip immediately below the firearm's trigger.
17. The trigger finger reset of claim 16, wherein when said switch is disengaged said clutch member is configured to allow said motor to rotate approximately half a revolution until said reset bar and said cam lobe are returned to the low position.
18. The trigger finger reset of claim 14, wherein said circuit board assembly is a voltage amplifier configured for taking input voltage from said power source and increasing voltage to said motor.
19. The trigger finger reset of claim 18, wherein said circuit board assembly configured to shut off said trigger finger reset when said input voltage is insufficient to run said motor.
20. The trigger finger reset of claim 19, wherein said circuit board assembly configured to provide reverse current protection.

ABSTRACT OF THE DISCLOSURE

A trigger reset that is disposed in a firearm handle including an electric motor, a battery, a gear box and cam lobe mounted on a shaft of the motor. A reset bar assembly is secured to the cam lobe. As shaft turns, cam lobe moves to provide a reciprocating motion to reset bar assembly. The reset bar assembly may be biased in lateral directions via a spring or the like. Rearward movement of the firearm trigger causes movement of the reset bar assembly in a rearward longitudinal direction. When the trigger reset is actuated, the motor rotates the cam lobe moving the reset bar assembly in a forward position thereby urging the trigger to a reset position prior to actuating the next firing sequence. The reset trigger system further includes a switch defining a face portion that is positioned on the exterior surface of the grip and immediately below the trigger for easy accessibility when holding or firing the firearm.

FIG. 1

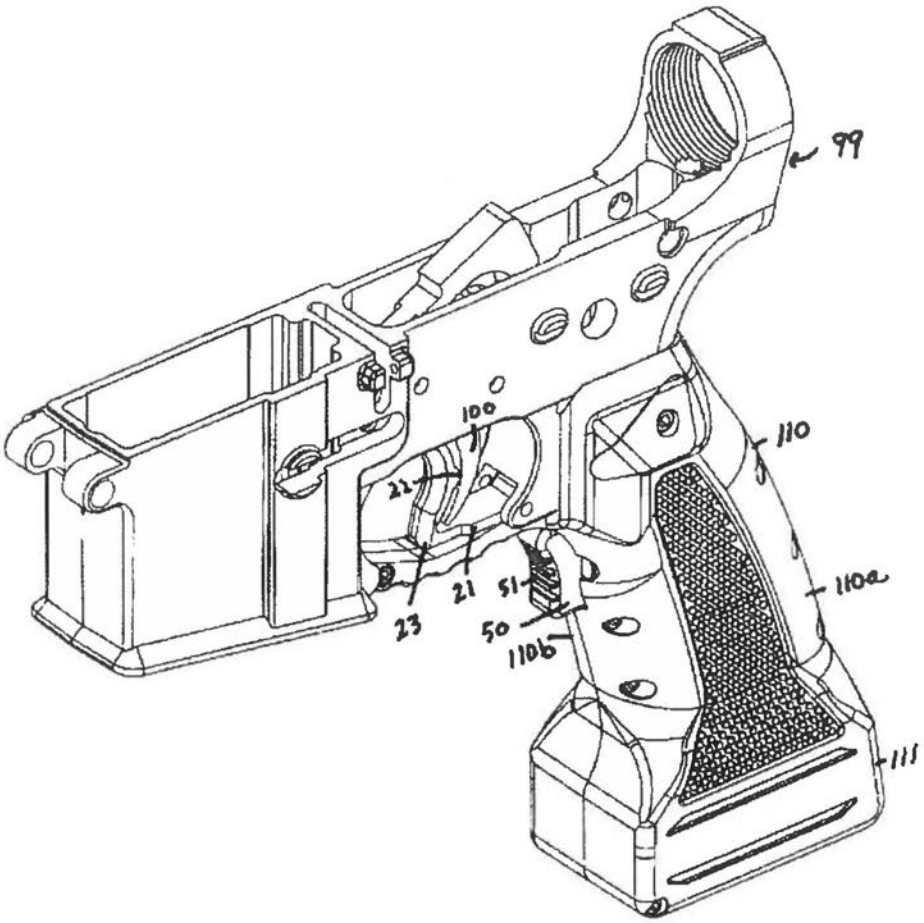

FIG. 2

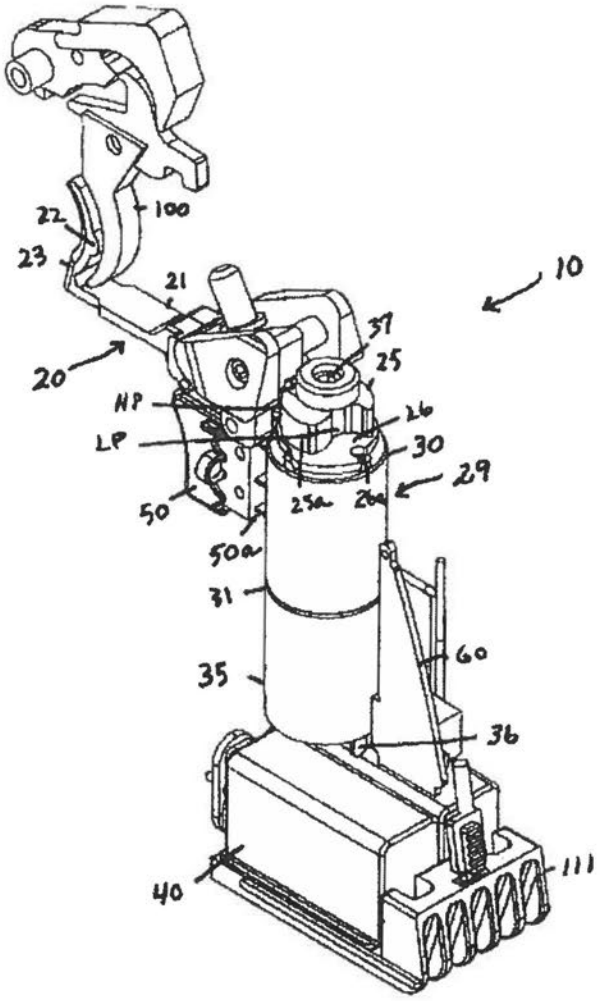
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FIG. 3

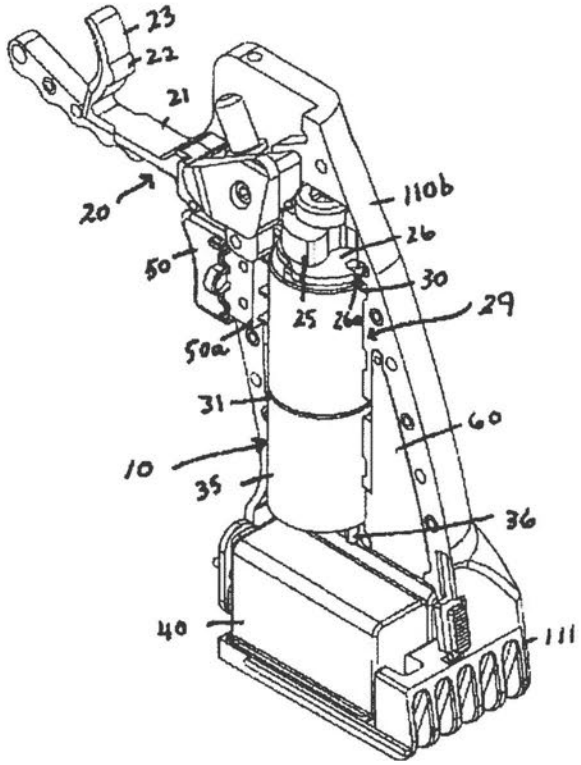

FIG. 4

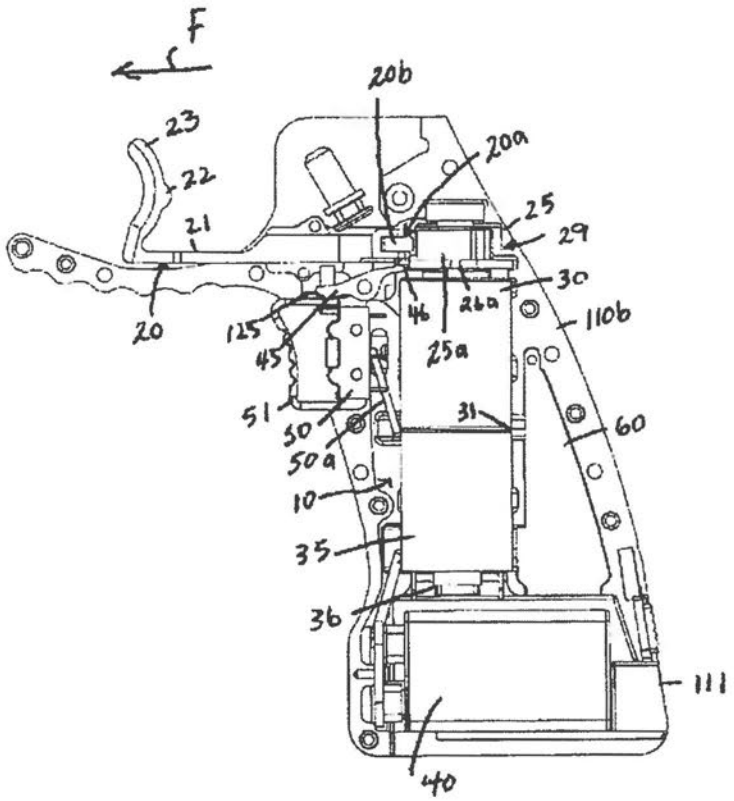
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FIG. 5

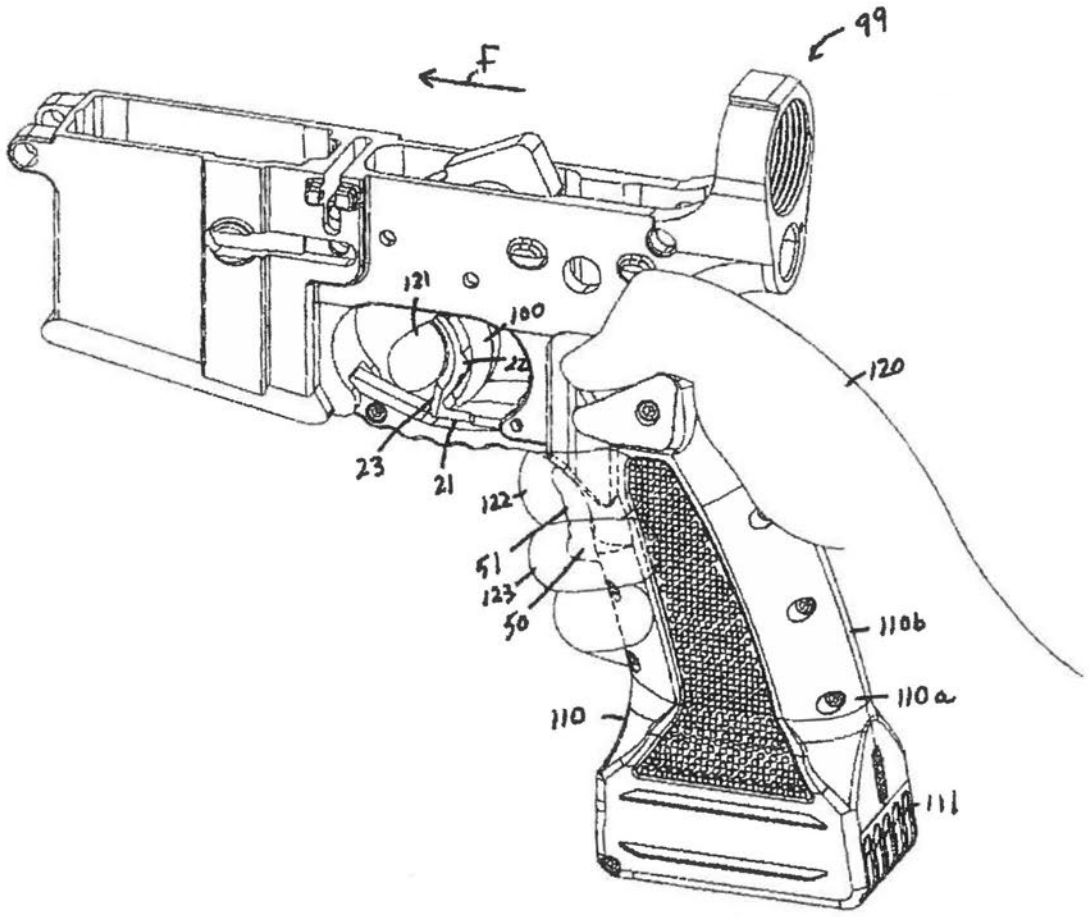
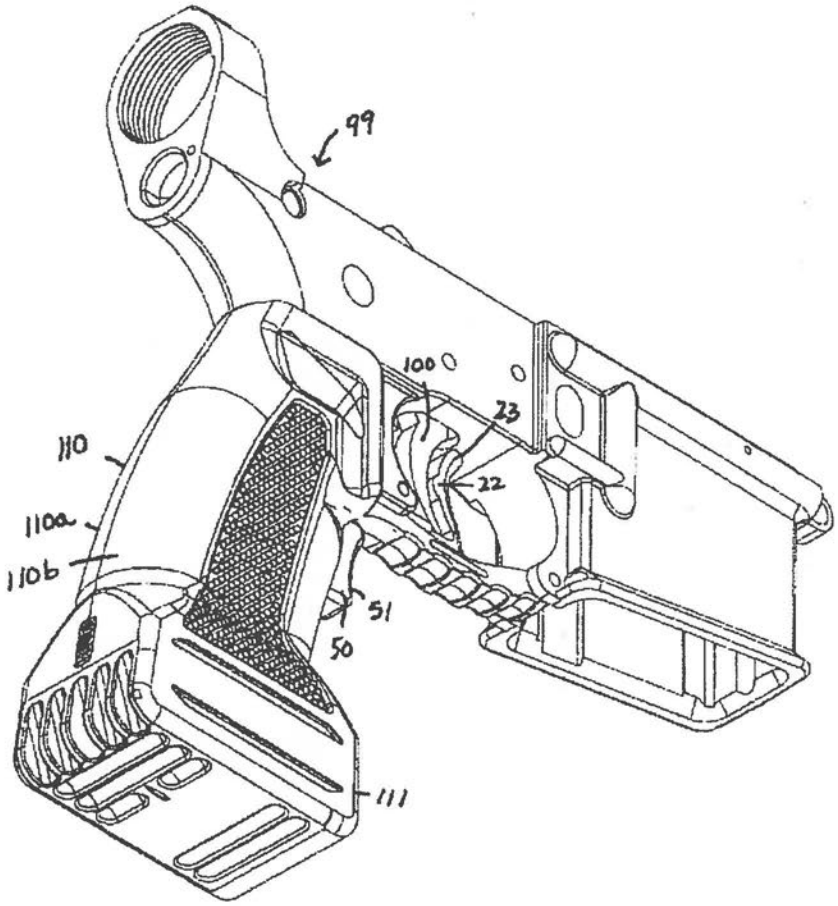


FIG. 6



U.S. Department of Justice

Bureau of Alcohol, Tobacco,
Firearms and Explosives

Martinsburg, WV 25405

www.atf.gov

907010: RKD
3311/303845

OCT 0 7 2016

[redacted]

Dear [redacted]

This is in reference to your submission and accompanying correspondence to, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), Firearms Technology Industry Services Branch (FTISB), which is accompanied by two AR-15 type rifles equipped with what is described as LV-15 Trigger Reset Devices (see enclosed photos).

As you know, the National Firearms Act (NFA), 26 U.S.C. § 5845(b), defines the term "**machinegun**" as—

…any weapon which shoots, is designed to shoot, or can be readily restored to shoot, *automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon,* ***any part designed and intended solely and exclusively, or combination of parts designed and intended, for use in converting a weapon into a machinegun****, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.*

The submitted devices, are described as "trigger reset devices." You further describe the design and function of the devices as "*a trigger actuating device that aids the user of an AR type rifle in pulling the trigger faster.*" As a part of this description, you note that the submitted device is "*an electronic device that used a rechargeable battery. The principle of the device is as follows: After the trigger is pulled and the rifle fired, the device pushes the trigger forward rapidly to reset the trigger, so that the user can pull the trigger faster.*"

The first sample examined by FTISB personnel consists of a Bushmaster model XM15-E2S .223-5.56 caliber AR-15 pattern rifle, serial number L476739, which is equipped with the following items:

- A self-contained trigger mechanism within an aluminum housing, being equipped with an electrical connection.
- A modified two position semiauto AR-15 type selector lever.
- An 11.1V 1200MAH rechargeable battery pack.
- A grip assembly with trigger guard having electrical connections and a piston which projects forward through the lower rear portion of the trigger guard and pushes the trigger forward as the firearm cycles.
- A grip attachment screw/bolt and straight pin.
- Several extra battery assemblies and a "Tenergy" charging assembly.
- One extra LV-15 trigger/grip/selector assembly.

The second sample, submitted at a later date, consists of an Anderson Manufacturing model AM-15, 5.56 caliber AR-15 pattern rifle, serial number 15272793, equipped with a similar "improved" version of the device. This version was noted to incorporate a three position selector rather than the two position selector featured on the first sample.

The written correspondence received with the samples provided the following statements in steps 4 thru 9, offering a description of how the device differed in function from that of a standard unmodified AR-15 pattern rifle:

4. "*The fourth step is where the process first differs from a normal AR-15 trigger group. As the hammer is reset and engaged past the disconnector, it also engages the sensor that is mounted behind the trigger group. This sends a signal to the control circuit and will continue sending that signal until it is released. For now, the control circuit, will not do anything, it waits until it stops receiving the signal.*"

5. "*As the bolt-carrier starts moving forward, it reaches a point where it releases the hammer and allows the hammer to be captured by the disconnector. Around the point where the hammer is allowed to rest on the disconnector is when it disengages the sensor. Once the sensor is disengaged and stops sending the signal to the control circuit, the control circuit begins a timer which lasts about 35 milliseconds.*"

6. "*With the timer still counting down, the bolt carrier group finishes travelling forward, having chambered a round, and the rifle is now in battery and ready to fire.*"

7. "*The seventh step occurs when the timer finishes counting down that 25 millisecond delay. Once the count-down is over, it turns on the solenoid for 15 milliseconds. As the solenoid turns on, the solenoid rod is going to try to push forward on the trigger, pushing it back to the firing position. However, the solenoid can only exert so much force. Therefore, the trigger will only reset if the user allows it to, by not exerting more than 12 pounds of force during said 15 millisecond interval.*"

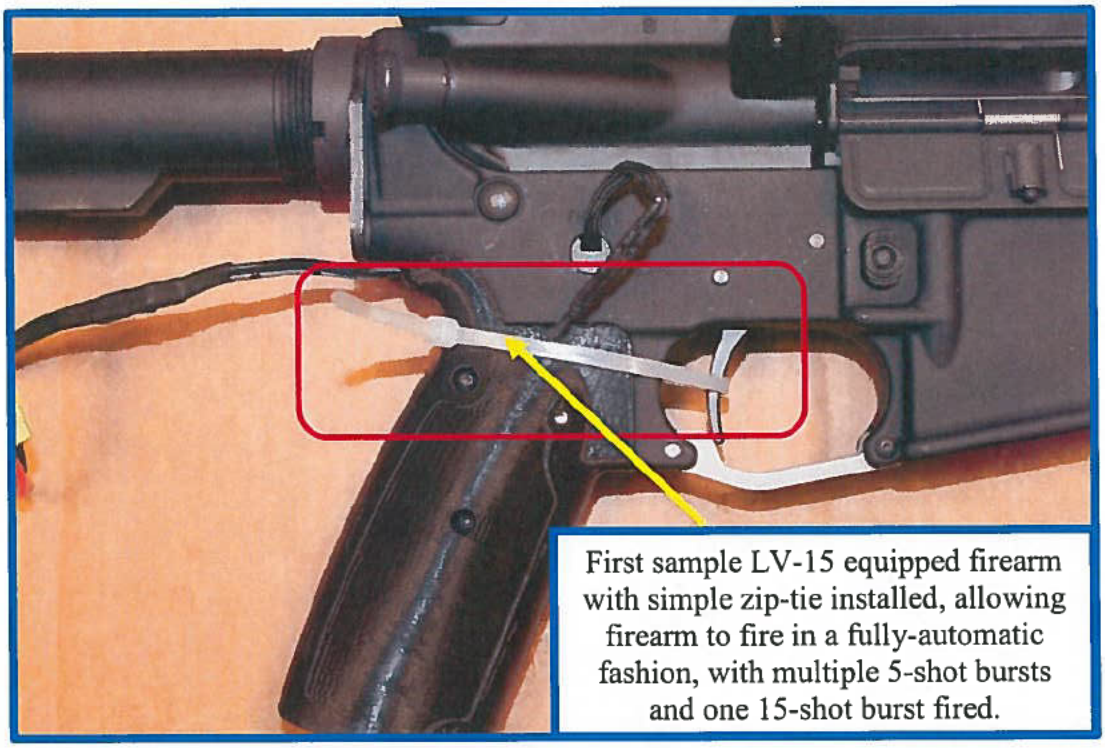
8. "*The final step takes place once the user has allowed the trigger to move forward enough, at which time the disconnector will release the hammer and allow it to set on the main sear, again just like in any AR-15. While the user must still allow the trigger to physically move forward to reset, the only difference is that here the user is being assisted in order to reset the trigger faster.*"

9. "*After the trigger has reset the rifle does not continue to shoot automatically, as the trigger is forced back into the ready/cocked position, the user, as in all mechanical reset devices, must consciously pull the trigger if he/she desires to fire another round. Each pull of the trigger represents a separate and conscious decision by the operator to fire another round. If the user does not pull the trigger again, the rifle will not fire again.*"

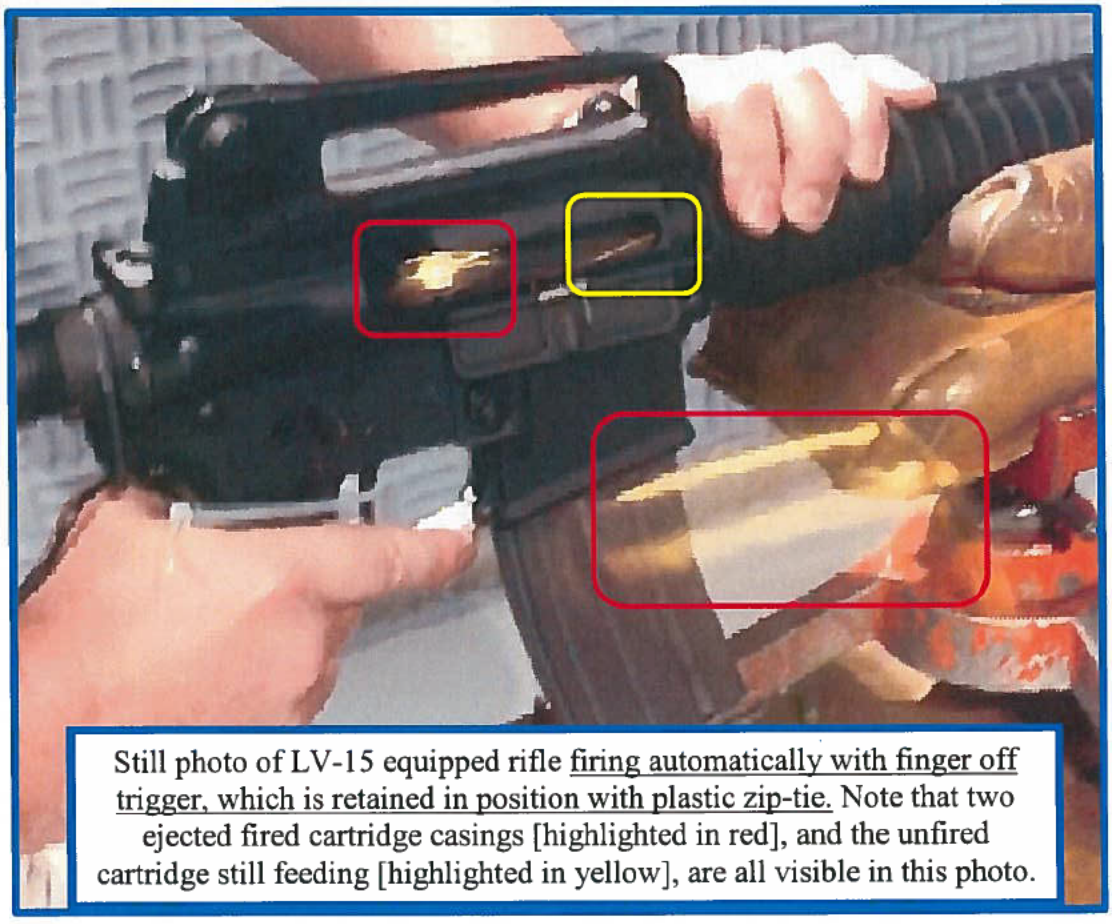
When the trigger was pulled slowly and retained in a position at which the hammer was just release with the device actuated during manual field testing, a condition resembling automatic cycling was observed on several occasions, during field testing of the LV-15 equipped firearm. Actual test firing with live ammunition replicated this same condition.

In order to ensure that the LV-15 equipped firearm was actually firing more than one shot, without manual reloading, with a single function of the trigger, rather than firing a single shot with each function of the trigger, the following procedure was followed.

- A common 9-3/4 inch zip-tie was installed around the rear of the grip and the front of the sample's trigger.
- The zip-tie was gradually tightened until the trigger was retracted just enough to allow the hammer to fall.
- With the trigger retained in this position, the bolt assembly was retracted and retained in an open position, with the aid of the bolt catch.
- A five-round ammunition load was placed into the sample's magazine and the magazine was inserted into the firearm.
- Without touching the trigger (which was being retained in a fixed position by the plastic zip-tie), the bolt catch was depressed allowing the firearms bolt to travel forward and chamber a cartridge. Upon chambering the cartridge the weapon fired the entire five-round ammunition load automatically without the trigger being repeatedly pulled and released.
- This same test was repeated several times with a five- round ammunition load and once with a fifteen-round ammunition load. In all instances, the LV-15 equipped firearm discharged its entire ammunition load upon initiating the firing sequence by depressing the bolt release, thus allowing the bolt assembly to move forward and both chamber and fire cartridges repeatedly.

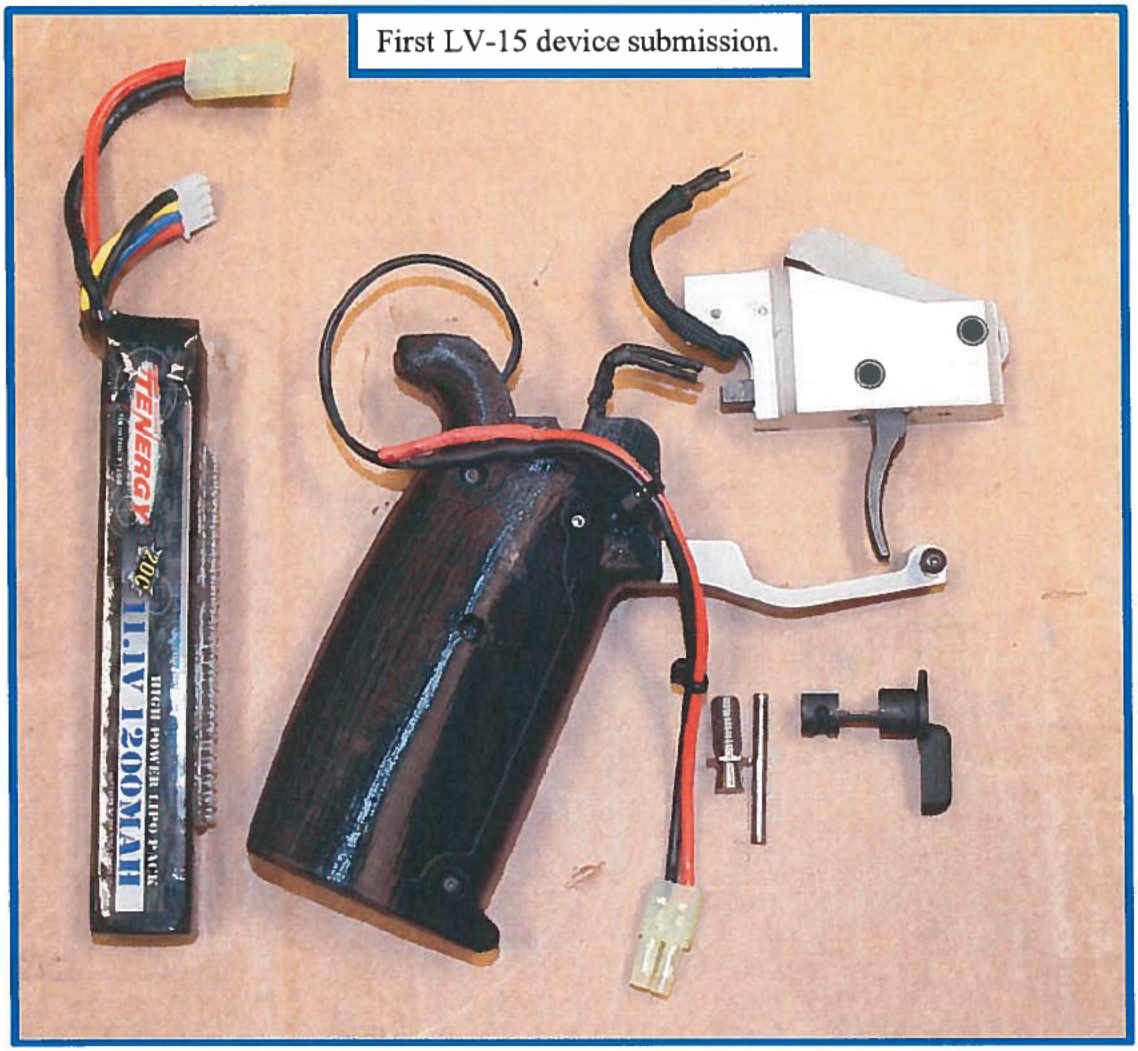


First sample LV-15 equipped firearm with simple zip-tie installed, allowing firearm to fire in a fully-automatic fashion, with multiple 5-shot bursts and one 15-shot burst fired.



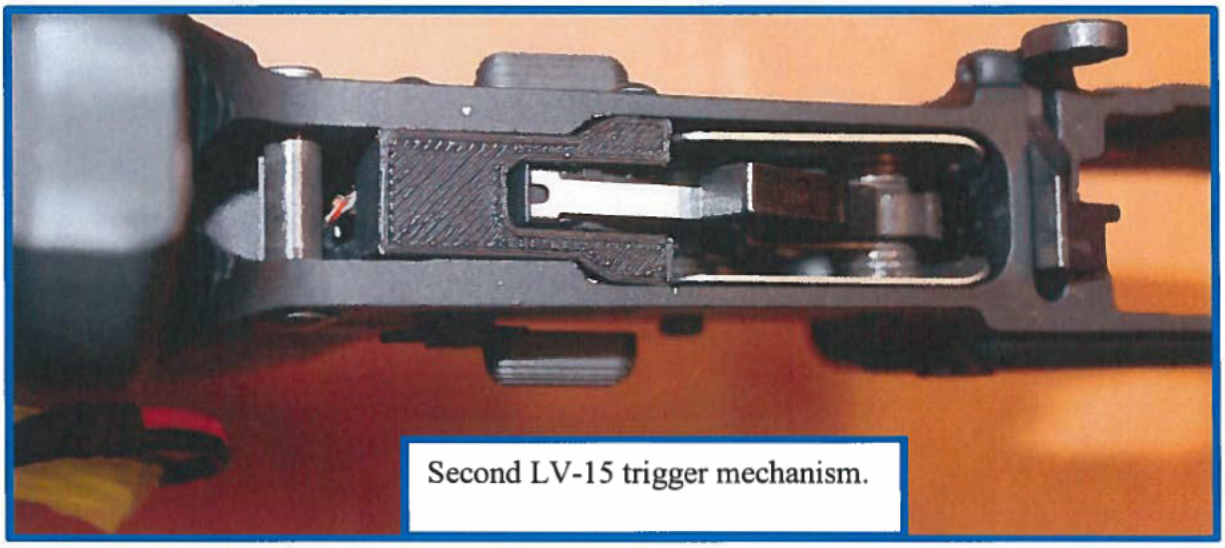
Still photo of LV-15 equipped rifle <u>firing automatically with finger off trigger, which is retained in position with plastic zip-tie.</u> Note that two ejected fired cartridge casings [highlighted in red], and the unfired cartridge still feeding [highlighted in yellow], are all visible in this photo.

FTISB testing with the trigger of the LV-15 equipped firearm pictured on the previous page, retained in the static position shown with a plastic zip-tie, revealed that the LV-15 device could allow a semiautomatic AR-15 type firearm to fire automatically more than one shot, without manual reloading, by a single function of the trigger.



FTISB next proceeded with an examination of the second LV-15 equipped firearm, which was submitted on April 6, 2016. This second prototype is described as being functionally identical to the previous model pictured above, featuring "*small improvements that have come as the result of further development since the original submission.*" The LV-15 device equipped rifle initially manually field tested and appeared to operate similarly to the first version of the LV-15 examined. Shortly after testing began, the LV-15 device ceased operating. Both recharging the original battery and substituting a different recharged battery failed to return the device to operational status. Due to the aforementioned deficiency, FTISB personnel terminated testing of the submitted device.

Second LV-15 prototype.



Second LV-15 trigger mechanism.

Although testing of the second device could not be completed because of the malfunction, it is designed, and operates, in the same way as the first submitted device. As a result of the subject test weapon firing more than one shot, without manual reloading, by a single function of the trigger with the submitted device installed, the submitted LV-15 devices are classified as a combination of parts designed and intended, solely and exclusively, for use in converting a weapon into a machinegun and thus a "**machinegun**" as defined in 26 U.S.C. § 5845(b). This classification is based on an evaluation of the item as submitted and that the item converts a weapon to fire automatically, regardless of how reliably it shoots automatically more than one shot, without manual reloading, by a single function of the trigger.

As stated above, Federal law defines "machinegun," in relevant part, as "any weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger" as well as a "combination of parts designed and intended, for use in converting a weapon into a machinegun." Legislative history for the NFA indicates that the drafters equated a "single function of the trigger" with "single pull of the trigger." National Firearms Act: Hearings Before the Comm. on Ways and Means, House of Representatives, Second Session on H.R. 9066, 73rd Cong., at 40 (1934). Therefore, ATF has long held that a single function of the trigger is a "single pull" or, alternatively, a single release of a trigger. Therefore, a firearm is not a machinegun if a projectile is expelled when the trigger is pulled and a second projectile is expelled when the trigger is released.

To initiate firing using the LV-15, a shooter must simply pull the trigger (photo 1—note that the solenoid rod is inside the firearm. These photos show the approximate location of the rod in the firearm. This is done simply to explain the functioning of the device). After firing, and when the bolt has loaded a second round of ammunition (photo 2-3), the mechanical-electrical operation of the LV-15 trigger device utilizes a "solenoid rod" to push the trigger forward as if the shooter had released the trigger (photo 4). Although the trigger is pushed forward the shooter never releases the trigger. Pursuant to your explanation, the shooter must merely maintain a pull that exerts "not more than 12 pounds of force during said 15 millisecond interval." If the shooter maintains this pressure, a second shot is fired (photo 5). As stated above, firing requires so little input from the shooter—a single pull with constant pressure—that a zip tie can effectively fire a weapon utilizing the LV-15 until the ammunition source is exhausted. A shooter need only pull the trigger once to initiate firing, and the LV-15 then operates automatically to continue firing.

Photo 1 obtained from customer supplied video of rifle utlizing CMMG .22LR conversion device.

Photo 2 obtained from customer supplied video of rifle utlizing CMMG .22LR conversion device.

Photo 3 obtained from customer supplied video of rifle utlizing CMMG .22LR conversion device.

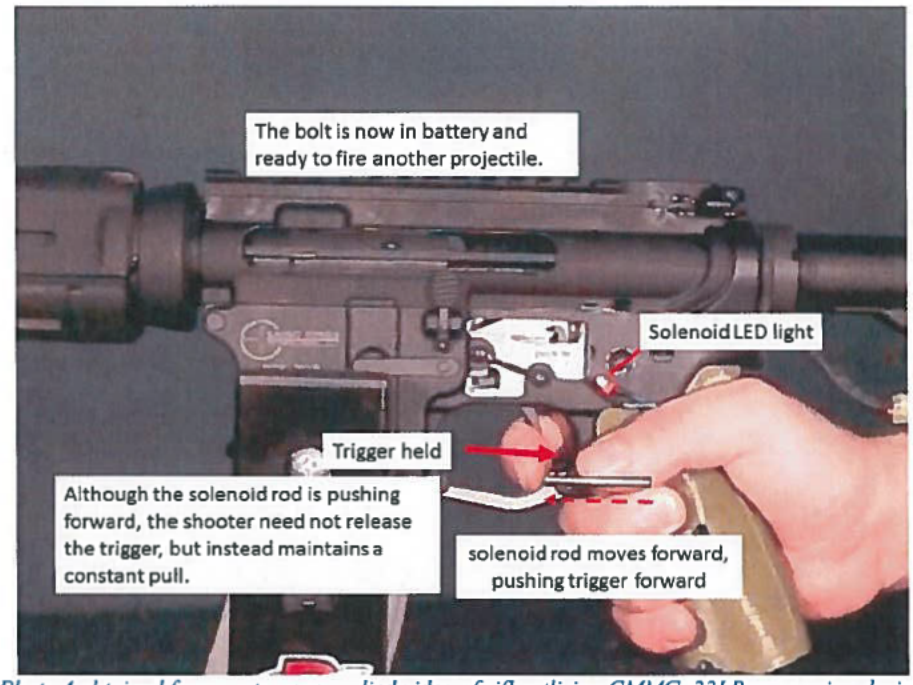


Photo 4 obtained from customer supplied video of rifle utlizing CMMG .22LR conversion device.

Photo 5 obtained from customer supplied video of rifle utlizing CMMG .22LR conversion device.

This Branch has previously approved certain devices sometimes known as "bump fire" stocks in which a shooter pulls the trigger and applies forward pressure with the non-

trigger hand to fire additional projectiles. To function as designed, the trigger must be pulled and held without release. After it fires the first projectile, the firearm recoils and pushes rearward, sliding back in the stock. Although the shooter maintains constant pull on the trigger, the backward movement of the firearm relative to the trigger causes the trigger to reset, as if the trigger had been released. The firing sequence will stop at this point unless the shooter maintains forward pressure on the firearm with his non-shooting hand. This forward pressure moves the firearm forward relative to the trigger and causes a second projectile to fire. Whereas, in the case of typical firearms, a trigger must be pulled backward to fire a projectile, in the case of bump fire stock, the second and subsequent shots operate by keeping the trigger in place and moving the firearm forward.

This Branch approved these devices, but this was in spite of the fact that the devices utilize a "single function of the trigger." As was explained in those classification letters, these items were not classified as machineguns because the stocks had no automatically functioning mechanical parts or springs and performed no automatic mechanical function when installed. A weapon is a machinegun if it shoots, is designed to shoot, or can be readily restored to shoot, *automatically* more than one shot, without manual reloading, by a single function of the trigger. Because the shooter was required to provide the forward pressure with his hand, the firearm did not function "automatically." The LV-15 does operate automatically, as it uses an electrical-mechanical device to automatically cycle the trigger forward against the initial trigger pull, thus allowing the LV-15 equipped firearm to automatically fire.

Please be aware, our Branch has also evaluated similar devices which have prevented the trigger from positively resetting and resulted in a "hammer-follow" scenario. A device designed to prevent the hammer from positively resetting could cause a firearm to shoot automatically more than one shot, without manual reloading, by a single function of the trigger, and would also be classified as a combination of parts designed and intended, solely and exclusively, for use in converting a weapon into a machinegun; thus a "**machinegun**" as defined in 26 U.S.C. § 5845(b).

FTISB finds that the host AR-type firearms, Bushmaster AR-type receiver serial number L476739, and Anderson Manufacturing AR-type receiver serial number 15272793, not having any modifications made which would cause them to fire automatically, or incorporating the frame or receiver of a machinegun, are not "machineguns" as defined in 26 U.S.C. § 5845(b).

The subject Bushmaster and Anderson Manufacturing firearms will be returned to you as soon as our Branch has received either a FedEx account number, or a FedEx or alternate carrier prepaid return label. Please advise our Branch within 60 days of receipt of this letter regarding the disposition of these firearms. The submitted LV-15 devices, which are classified as "machineguns" as defined in 26 U.S.C. § 5845(b), cannot be returned to you unless you are a licensed firearms manufacturer who has paid the Special Occupational Tax (SOT).

We trust the foregoing has been responsive to your current evaluation request and regret that our written response was delayed due to FTISB's current workload.

Sincerely yours,

Michael R. Curtis
Chief, Firearms Technology Industry Services Branch

Cc: Stephen P. Halbrook, PH.D.